P.G. Diploma in Biodiversity

Prospectus No. 20151236

संत गाडगे बाबा अमरावती विद्यापीठ

SANT GADGE BABA AMRAVATI UNIVERSITY

विज्ञान विद्याशाखा
(FACULTY OF SCIENCE)

PROSPECTUS

OF

P.G. DIPLOMA IN BIODIVERSITY EXAMINATIONS
SEMESTER-I & SEMESTER-III WINTER-2014
SEMESTER-II & SEMESTER-IV SUMMER-2015

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INDEX

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SANT GADGE BABA AMRAVATI UNIVERSITY

SPECIAL NOTE FOR INFORMATION OF THE STUDENTS

(1) Notwithstanding anything to the contrary, it is notified for general information and guidance of all concerned that a person, who has passed the qualifying examination and is eligible for admission only to the corresponding next higher examination as an ex-student or an external candidate, shall be examined in accordance with the syllabus of such next higher examination in force at the time of such examination in such subjects papers or combination of papers in which students from University Departments or Colleges are to be examined by the University.

(2) Be it known to all the students desirous to take examination/s for which this prospectus has been prescribed should, if found necessary for any other information regarding examinations etc., refer the University Ordinance Booklet the various conditions/ provisions pertaining to examination as prescribed in the following Ordinances.

Ordinance No. 1	:	Enrolment of Students.
Ordinance No. 2	:	Admission of Students
Ordinance No. 4	:	National cadet corps
Ordinance No. 6	:	Examinations in General (relevent extracts)
Ordinance No. 18/2001	:	An Ordinance to provide grace marks for passing in a Head of passing and Inprovement of Division (Higher Class) and getting Distinction in the subject and condonation of defficiency of marks in a subject in all the faculties prescribed by the Statute NO.18, Ordinance 2001.
Ordinance No. 9	:	Conduct of Examinations (relevent extracts)
Ordinance No. 10	:	Providing for Exemptions and Compartments
Ordinance No. 19	:	Admission of Candidates to Degrees.
Ordinance No. 109	:	Recording of a change of name of a University student in the records of the University.
Ordinance No. 138	:	For improvement of Division/Grade.

Ordinance No.19/2001	:	An Ordinance for Central Assessment Programme, Scheme of Evaluation and Moderation of answerbooks and preparation of results of the examinations, conducted by the University, Ordinance 2001.

Dineshkumar Joshi
Registrar
Sant Gadge Baba Amravati University.

PATTERN OF QUESTION PAPER ON THE UNIT SYSTEM

The pattern of question paper as per unit system will be boradly based on the following pattern.

(1) Syllabus has been divided into units equal to the number of question to be answered in the paper. On each unit there will be a question either a long answer type or a short answer type.

(2) Number of question will be in accordance with the unit prescribed in the syllabi for each paper i.e. there will be one question on each unit.

(3) For every question long answer type or short answer type there will be an alternative choice from the same unit. However, there will be no internal choice in a question.

(4) Division of marks between long answer and short answer type question will be in the ratio of 40 and 60.

(5) Each short answer type question shall Contain 4 to 8 short sub question with no internal choice.

% Ordinance no.6 of 2009

Examinations leading to the Post-Graduate Diploma in Biodiversity [Semester Pattern.....Two Year (Full Time) P.G. Diploma Course] in the faculty of Science, Ordinance, 2009.

Whereas it is expedient to frame an Ordinance in respect of Examinations leading to the Post-Graduate Diploma in Biodiversity [Semester Pattern.....Two Year (Full Time) P.G. Diploma Course] in the faculty of Science, Ordinance, 2009, for the purposes hereinafter appearing the Management Council is hereby pleased to make the following Ordinance.

1) This Ordinance may be called, ñExaminations leading to the Post-Graduate Diploma in Biodiversity [Semester Pattern.....Two Year (Full Time) P.G. Diploma Course] in the faculty of Science, Ordinance, 2009ò

2) This Ordinace shall come into force w.e.f. the date of its approval by the Management Council.

3) Following shall be the Examinations leading to the Post - Graduate Diploma in-

   (i) Post Graduate Diploma in Biodiversity, Semester-I - Examination

   (ii) Post Graduate Diploma in Biodiversity, Semester-II - Examination

   (iii) Post Graduate Diploma in Biodiversity, Semester-III - Examination

   (iv) Post Graduate Diploma in Biodiversity, Semester-IV - Examination

4) Duration of each of the above semester shall be six months with an examinations at the end of each semester.

5) (i) The examinations specified in paragraph 3 above shall be held twice a year at such places and on such dates as may be appointed by the Board of Examinations.

   (ii) Main Examination of Semester-I, Semester-III & Semester-IV shall be held in Winter and Supplementary Examination in Summer.

   (iii) Main Examination of Semester-II shall be held in Summer and Supplementry Examination in Winter.

6) Subject to his/her compliance with the provisions of this Ordinance and other Ordinances in force from time to time following candidates

% Approved by M.C. Dt. 21/4/2009, vide item No. 114

shall be eligible for admission to the Post-Graduate Diploma in Biodiversity [Semester Pattern.....Two Year (Full Time) P.G. Diploma Course] :-

Graduates in Biological Sciences of the University or of any statutory University equivalent thereto, with 50% marks (45% for B.C. Candidates at the degree level).

7) Subject to his/her compliance with the provisions of this Ordinance and of other Ordinances (Pertaining to examination in General) in force from time to time, the applicant for admission to examination at the end of the course of study of a particular Semester shall be eligible to appear at it, if:

   (i) He/She satisfied the condition in the table and the Provision there under :-

TABLE

Sr. No.	Name of examination	The student should have completed the term satisfactorily	The student should have passed following examination
1	2	3	4
1	Diploma in Biodiversity Semester-I	Semester-I	As indicated in Para 6.
2	Diploma in Biodiversity Semester-II	Semester-II	ð ð ð ð ð
3	Diploma in Biodiversity Semester-III	Semester-III	Semester-I Complete and 2/3 of Semester-II.
4	Diploma in Biodiversity Semester-IV	Semester-IV	ð ð ð ð ð

(**Note-**Subjects prescribed and numbered in the scheme of Examinations shall be treated as seperate subjects, however, the theory and practical, if any, of the subject shall be treated as seperate Head of Passing.)

   (ii) He/She has complied with provisions of Ordiance pertaining to Examination in general.

   (iii) He/She has prosecuted a regular course of study in University Department/College affiliated to the University.

   (iv) He/She has in the opinion of the Head of the Department / Principal, shown satisfactory progress in his/her studies.

8) (i) The Examination shall consist of the theory paper, practical, college assessment, and Dissertation with the maximum and minimum pass marks as shown in the Appendix appended to this Ordinance.

(ii) The minimum pass standard for the examination shall be as indicated in the Appendix-A. Passing in each paper shall be compulsory.

(iii) The norms relating to internal assessment in each paper shall be as under-

(a) Tutorial / Home Assignment - 08 Marks

(b) Paper presented by the student at the Seminar, participation in discussion at the seminar, group. - 07 Marks

(c) Regularity of students in the attendance, performance in the class room and library work, participation in class room, general performance etc. to be taken into account - 05 Marks

(d) No supervisor shall guide at a time more than five students for dissertation.

(e) The students shall have to submit three copies of Dissertation to the Principal of the college atleast one month before the commencement of the theory examination.

9) Examination fees for each semester of the examination and also the practical examination shall be as prescribed by the University from time to time.

10) An examinee who is successful at Semester-I, Semester-II, Semester-III, & Semester-IV examinations under this Ordinance and who obtained 75% or more marks in aggregate of Semester-I, Semester-II, Semester-III, & Semester-IV Examinations shall be placed in the First Division with Distinction, those obtaining 60% or more but less than 75% shall be placed in the First Division and all other successful examiness shall be placed in the Second Division.

11) (i) Scope of the subjects shall be as indicated in the syllabus.

(ii) Medium of instruction and examination shall be English.

12) Provision of Ordinance No.18 of 2001 relating to an Ordinance to provide grace marks for passing in a head of passing and Improvement of Division (Higher Class) and getting distinction in the subject and condonation of deficiency of marks in a subject in all the faculties prescribed by the Statute No.18 and of Ordinance No.10 relating to Providing for Exemptions and Compartments shall apply to the examination under this Ordinance.

13) An examinee who does not pass or who fails to present himself/ herself for the examination shall be eligible for readmission to the same examination on payment of fresh fees and such other fees as may be prescribed.

14) As soon as possible after the examination, the Board of Examinations shall publish a result of the examinees. The result of the examinations shall be classified as above and merit list shall be notified as per Ordiance No. 6

15) Notwithstanding anything to the contrary in this Ordinance no one shall be admitted to an examination under this Ordinance, if he/she has already passed the same examination or an equivalent examination of any Statutory University.

16) Examinees who have passed in all the subject prescribed for Semester-I, Semester-II, Semester-III, & Semester-IV of the examination of the Diploma course shall be eligible for award of the Post-Graduate Diploma in Biodiversity. [Semester Pattern.....Two Year (Full Time) P.G. Diploma Course].

APPENDIX-A

POST GRADUATE DIPLOMA COURSE IN BIODIVERSITY

TWO YEARS POST GRADUATE DIPLOMA COURSE - SEMESTER PATTERN

T - THEORY
P- PRACTICAL
BD - BIODIVERSITY

Sr. No.	Sub. Code No.	Subject	Teaching Scheme			Examination Scheme									Total
			T	P	Total Periods / Week	Theory					Practical				
						Duration of Papers (Hrs)	Max. Marks Theory Papers	Max. Marks College Assessment	Total	Min. Pass Marks	Max. Marks	Max. Marks College Assessment	Total	Min. Pass Marks	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
		Semester-I													
1	1BD1	Diversity of Animal	5	-	5	3	80	20	100	40	--	--	--	--	100
2	1BD2	Diversity of Plants	5	-	5	3	80	20	100	40	--	--	--	--	100
3	1BD3	Biodiversity and Ethnobiology	5	-	5	3	80	20	100	40	--	--	--	--	100
4	1BD4	Practical	-	3	3	-	-	-		-	50	50	100	50	100
		Semester-II													
1	2BD1	Diversity of Microbes	5	-	5	3	80	20	100	40	--	--	--	--	100
2	2BD2	Biodiversity and Ecology	5	-	5	3	80	20	100	40	--	--	--	--	100
3	2BD3	Wildlife Conservation and Management	5	-	5	3	80	20	100	40	--	--	--	--	100
4	2BD4	Practical	-	3	3	-	-	-		-	50	50	100	50	100
		Semester-III													
1	3BD1	Concept of Biodiversity	5	-	5	3	80	20	100	40	--	--	--	--	100
2	3BD2	Conservation of Biodiversity	5	-	5	3	80	20	100	40	--	--	--	--	100
3	3BD3	Conservation techniques	5	-	5	3	80	20	100	40	--	--	--	--	100
4	3BD4	Practical	-	3	3	-	-	-		-	50	50	100	50	100
		Semester-IV													
1	4BD1	Dissertation	-	-	-	-	-	-	-	-	400	--	400	200	400

Syllabus Prescribed for
P.G.Diploma Course in Biodiversity
(Semester Pattern - Two Year P.G.Diploma course)

SEMESTER - I
PAPER (1 BD 1)
Diversity of Animals

Unit I : Unicellular and multicellular animals
Diversity of free-living protozoan
Diversity of parasitic protozoan
Diversity of freshwater and marine sponges.

Unit II : Diversity of freshwater microinvertabrates (annelids, molluscs, arthropods)
Diversity of planktons
Butterfly diversity

Unit III : Diversity of economically important insects.
Insect as indicator for biodiversity monitoring

Unit IV : Diversity of freshwater fishes (lentil and lotic)
Diversity of herpatofauna (amphibians and reptiles)

Unit V : Avian diversity. Migratory and endemic bird species.
Herbivorous and carnivore mammalian diversity.

Books :

(1) Principle of systematic zoology - Ernst Mayr and Peter D. Ashlock.
(2) Systematic and origin of species - Ernst Mayr
(3) A Handbook of Biological Illustration - Zweifel, F.W.
(4) Biodiversity - Wilson, E.O.
(5) Biological Techniques; Collecting, Preserving and Illustrating Plant & Animals - Knudsen, J.W.
(6) Discrimination and classification - Hand, D.J.
(7) Guide to the Taxonomic literature of vertebrate - Black welder, R.E.Vertebrate speciation - Blair, W.F.
(8) The chordats-Alenxander,R M
(9) The chordats-Moneith A R
(10) Chordata-Waterman A J
(11) The life of Vertabrates-Young J Z
(12) Limnology-Welch
(13) Principle of systematic zoology - Ernst Mayr and Peter D. Ashlock.
(14) Systematic and origin of species - Ernst Mayr
(15) A Handbook of Biological Illustration - Zweifel, F.W.
(16) Biodiversity - Wilson, E.O.
(17) Biological Techniques; Collecting, Preserving and Illustrating Plant

& Animals- Knudsen, J.W.Discrimination and classification - Hand, D.J.
(18) Guide to the Taxonomic literature of vertebrate - Black welder, R.E.
(19) Vertebrate speciation - Blair, W.F.

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PAPER (1 BD2)
Diversity of plants

Unit I : Diversity of thallophytes (Algae and fungi)-
Algae: Distribution, diversity and elementary knowledge about algae with suitable
Examples of chlorophycae, cyanophyceae, and rhodophyceae.
Fungi: Distribution, diversity and elementary knowledge about fungi with suitable examples of *Albugo*, *Mucor, Penicillium* and mushrooms.

UnitII : Diversity of Lichens and Bryophytes-
Lichens: Distribution, diversity and elementary knowledge about lichens with Suitable examples.
Bryophytes: Distribution, diversity and elementary knowledge about bryophytes With suitable examples.

UnitIII : Diversity of Pteridophytes-
Pteridophytes: Distribution, diversity and elementary knowledge about
Pteridophytes with suitable examples.
Stellar evolution, Heterospory and seed habit, Apospory and apogamy with Suitable examples.

Unit IV : Diversity of Gymnosperms -
Gymnosperms: Distribution, diversity and elementary knowledge about
Gymnosperms with suitable examples.

Unit V : Diversity of Angiosperms
Angiosperms: Distribution, diversity and elementary knowledge about Angiosperms with suitable examples.

Books :

(1) Plant Taxonomy - Saxena & Saxena
(2) A text book of Gymnosperms-Vyas, Purohit, Garg
(3) A text book of botany-A C Dutta
(4) A text book of Angiosperms-Pande B P
(5) Taxanomy of Angioserms_- Vasistha P.C.
(6) Trees: Their natural history-Thomas, P

PAPER (1 BD 3)

BIODIVERSITY AND ETHNOBIOLOGY

Unit I : Ethnic societies-

Ethnic societies of the world and India. Their biological contribution to modern Civilization. Community Knowledge. Caste and conservation.

Important plant genetic resources conserved by ethnic societies of the world.

Unit II : Ethnobiology-

Ethinobiological studies on drugs of plants and animals origin used by Tribes.

New sources of wild food used by the tribal in India.

Economic value of traditional medicine.

Importance of Traditional medicine as the future materia medica of the

Civilization. The Scientific and economic perspectives of medicinal plants.

Unit III : Traditional systems of medicine-

History of Traditional systems of medicine of world and India.

Plants used by traditional healers of India and China. Their traditional and

Modern uses. Herbal home remedies in India. Importance of traditional healers in Modern medicine.

Use of animal parts or animal products in traditional and modern medicine.

Unit IV : Commercialization and patenting of herbal drugs used by traditional healers.

Traditional versus modern medicine. Biopiracy of medicinal plants & animals. Promotion of ethnobioloy and traditional medicine in India.

Unit V. : Conservation movements-

Age old and modern Conservation movements of the world a review. International Biodiversity Conventions and Protocols

Conservation movements in India - Devraiôs, Bishnoiôs, Chipko movement, etc.

Participation in conservation and development of linkages and interest groups

Books :

1) Ethnobiology (Role of Indigenous and Ethnic Societies in Biodiversity Conservation, Human Health Protection and Sustainable Development)/Rajiv K. Sinha and Shweta Sinha. 2001

2) Ethnobotany : The Renaissance of Traditional Herbal Medicine- by Rajiv K. Sinha

3) Ethnobiology in Human Welfare : Proceedings of IV International Congress of Ethnobiology held at Lucknow, India, 17-21 November 1994 - by S.K. Jain

4) Ethnobotany- by Pravin Chandra Trivedi, 2002

5) A Handbook of Ethnobotany by S.K.Jain and V. Mudgal

6) Plants and society by M.S. Swaminathan and S.L. Kochar

7) Ethnobotany and Medicinal Plants of Indian Subcontinent-by J K Maheshwari, 2000

8) Ethnobotany of Nasik District, Maharashtra by M.V. Patil and D.A. Patil, 2006

9) Ethnomedicine and Human Welfare, by Irfan Ali Khan and Atiya Khanum, 2004

SEMESTER II

PAPER (2 BD 1)

Diversity of Microbes

(Bacteria, Viruses & Soil Microbiology)

Unit I : Classification of Microorganisms-

A. Bacterial Classification

i. Definition of taxonomy (systematic), classification, identification, Nomenclature and taxonomic ranks.

ii. Whitakerôs classification - Introduction only

iii. Methods of classification: Intuitive, Numerical, taxonomy, Genetic Relatedness.

B. General Characters of *Mycoplasma, Rickettsia, Chlamydia,* *Actinomycetes, Cyanobacteria and Archaebacteria*

Unit II : Viruses

i) General characteristics of viruses

ii) Structure of viruses -

iii) Classifications of viruses - LHT system

iv) Replication of viruses - Lytic cycle and Lysogeny

v) Cultivation of viruses.

vi) Detection of virus growth

Unit III: Microbial associations and biodiversity -

i) Microbial interactions

ii) Microbe - microbe interactions

iii) Microbe - plant interactions

iv) Animal - microbe interactions

v) Microbial products influencing plant growth

Unit IV : Soil Microbiology

i) Relationship between Microbes and Soil
ii) Microorganisms in soil
iii) Soil types and their micro flora
iv) Role of microbes in soil fertility.
v) Biofertilizers, biological pest control
vi) Decomposition of plant and animal residue in soil
vii) Rhizosphere - habitat for soil microorganisms, Structure, rhizosphere Effect.

Unit V : Ecosystem energetic-

Energy flow and nutrient cycles in ecosystem.

Bio- geochemical cycles

a) Carbon cycle
b) Nitrogen cycle
c) Sulfur cycle
d) Phosphorous cycle
e) Iron and Manganese transformation

Books

1) Microbiology by Pelczar, Chan and Noel Krieg
2) Biotechnological applications of Microbes by Ajit Varma and Gopi K Podila
3) Text book of Microbiology by K Sharma
4) Manual of Microbiology by K Sharma
5) Microbiology by Prescott
6) Microbiology: Fundamentals and applications by Purohit

PAPER (2 BD 2)

Biodiversity and Ecology

Unit I : Community Ecology-

Nature of biotic community. Structure, organisation and stability of it.

Measures of diver sity and richness. Methods of study of community

Unit II : Population Ecology -

Population and its characteristics.

Role of statistics in science and scientific methods.

Population simulation methods. Population estimation methods

Unit III : Behavioural ecology-

Behavioral ecology and evolution: An interconnected approach.

Testing hypotheses in behavioral ecology. Intra and inter-specific competition.

Ecology and evolution of signals and community pathways.

Behavioral patterns in captivity and animal welfare.

Unit IV : Microbial ecology -

Characteristics of microbial ecology.

Evolutionary and Physiological adaptation of microbes. Techniques used to study Microbial ecology. Significance of study of microbial diversity. Extremophiles. Species and individual in ecosystems.

Unit V : National and international agencies of environment-

Elementary idea of International Biological Programme (I B P)

Man and Biosphere Programme

Environment Protection Agency (E P A)

International Union For Conservation of Nature (I U C N)

State Pollution Control Board.

NGOôs working on Environment Issues.

Books :

(1) Ecology-Chandel and Shukla
(2) Ecology-V K Shukla
(3) Ecology- odum
(4) Fundamentals of Ecology-Odum
(5) Ecology-Rickfy

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PAPER (II BD 3)

Wild life Conservation and Management

Unit I : Wild life-

Status of wild life in India and Abroad. Brief history.

Distribution of wild life in India. Rare and Endangered species.

Fate of Wild animals. Wildlife ethics, Wildlife values and human culture

Unit II : Wildlife conservation -

Principles of wildlife conservation, Necessity of wildlife conservation

Modes of conservation, Social Forestry, Agro Forestry and urban forestry

Programme. *in situ* vs. *ex situ* conservation. Wildlife conservation activities.

Economics of wildlife conservation. Species recovery Vs. Reintroduction,

Unit III : Wildlife Management -

Principles, Concept and importance of wildlife Management.

Computers in wildlife management.

Administration, Policy and Law in wildlife management.

Wildlife management of National parks and Sanctuaries of India.

Conservation projects of India. Wildlife Management success stories.

Unit IV : Wildlife Techniques and tools-

Wildlife Techniques and Census. Tools for studying wildlife.

Geographic Information system (G I S) and remote sensing in wildlife.

Special technique in wildlife research.

Wildlife forensics and conservation.

Unit V : Captive management for biodiversity conservation -

Wildlife health and utilization. Captive breeding and Propagation.

Zoo management. Role of Zoos and botanical gardens in Ecotourism.

Population Viability Analysis (Computer modeling)

Books :

1) Wildlife Biology -Dasmann
2) Wildlife in India -Soharia
3) Book of Indian Animals -Prater
4) Wildlife Management Technique -Giles
5) Fundamentals of Wildlife Management -Rajesh Gopal
6) Manual of wildlife Techniques in India -J.B.Sale and K.Berkneiller.
7) Guide to Indiaôs wildlife - A.N.Jagnnath Rao
8) Tigers - Kailash Sankhala
9) Wildlife in India - E.P.Gee
10) Threatened Animals in India - B. K.Tikader.

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Semester III

PAPER (III BD 1)

Concept of Biodiversity

Unit I : Concept of Biodiversity.

Biodiversity the natural biological capital of the Earth. Itôs importance at Global,

National and at local level. **B**iodiversity at Genetic, Species, Ecosystem, and Agro level.

Unit II : Biodiversity in Terrestrial Environment -

Forests, Grasslands, Deserts

Aquatic Environment - Marine, Freshwater, Eustrine, wetlands and Mangroves.

UnitIII : Biodiversity in Man made environment -

Agriculture fields, composts, Dams & Lakes, Zoos and Botanical Gardens.

Exobiology - Man in space.

Possibility of Extra Terrestrial life (As Assignment only)

Unit IV : Biodiversity distribution-

Hot spots of biodiversity of the world.

Biogeographically classification of India.

India as a Mega diversity Nation.

Unit V : Natural resource economics and values -

Social, Cultural, Religious, Ethical values of Biodiversity.

Aesthetic and option values of Biodiversity.

Environmental Services provided by biodiversity.

Biodiversity - Means of production or product.

Consumptive use. Productive use. Biomass for Business.

Books :

1) Biodiversity, by E.O. Wilson, National Academy Press, 1988.
2) Biodiversity Status and Prospects by Tandon
3) Biodiversity and Biotechnology by Ray Biodiversity and its significance by Y.A. Abrol
4) An Introduction to Biodiversity by Prithipalsingh
5) Modern pattern of Biodiversity conservation by Chauhan

PAPER (III BD 2)

Biodiversity Conservation

Unit I : Threats to biodiversity

Loss of Biodiversity and its causes. Patterns of losses.

Causes and factors of mass extinction.

Listing of Threatened biodiversity including vulnerable, rare, threatened,

Endangered and extinct plant and animal species. Red Data Book,

Blue Data Book

Unit II. : Biodiversity Conservation

Concept of Conservation. Conservation values and ethics.

Inventorisation of biological resources. Action plan of conservation.

Conservation of rare and endangered species Conservation through a network of protected areas.

Role of N G Oûs, in conservation activities.

Eco-development for biodiversity conservation

Unit III : An elementary idea of natural resources and management

Land use pattern -Past and Present Effect of human activities on soil quality.

Introduction to waste land management and its practices.

Soil Erosion and Conservation

Unit IV : Conservation of water

Need and importance of it. Practices of it.

Introduction to waste water management. Sewage water Management.

Unit V. : Case studies -Success and failures

Project Tiger

Project Elephant

Project Rhino

Project Crocodile and Turtle breeding

Basmati and Haldi patents

Books:

1) An advanced textbook on Biodiversity, Principles and Practice by K.V.Krishnamurthy
2) The Nature of Biological Diversity by Allen, J.M.
3) Conservation Biology by by S.K. Jain
4) Restoration of Endangered species by Bowles,M.L. and Whelan,C.J.
5) The Preservation of Species:The value of Biological Diversity by Norton B.G.

PAPER (III BD 3)

Conservation Techniques

Unit I **Cell culture technique-**

Design and functioning of tissue culture laboratory

Cell proliferation measurements

Cell viability testing

Culture media preparation and cell harvesting methods

Unit II. **Microbiological Technique**

Media preparation and sterilization

Inoculation and growth monitoring

Biochemical mutants & their use

Microbial assays

Unit III. **Ecological restoration**

Role of ecological restoration in conservation and some of the concerns of restoration ecology. Role of fire in determining habitat structure.

Control of invasive species, scales of management and cultural context.

Unit IV : Biodiversity Information & Biological Databanks-

Computer aided technique for data presentation, data analysis, and special softwareûs for special tasks

Software for identification of accessing existing databases on the World Wide Web, software for identification of species

Bio complexity issues in biodiversity. Need of metadata standard & ontology.

Unit V. Conservation and Prevention Acts in India-

The Environment protection Act, 1986

The wildlife protection Act, 1971,1972

The forest (conservation) Act, 1980

The Biodiversity Act

Books

1) Animal cell culture - A practical approach-Ed. John R.W.Masters, IRL press
2) Introduction to instrumental analysis-Robert Braun, Mc Grew Hill International Edition
3) A Biologists guide to Principles and Techniques of practical biochemistry-K Wilson & K H Goulding, ELBS Edn.

Semester I

Practical -1 BD4

1. Study of fauna of different zoogeographical regions. Minimum 3 examples from each region.
2. Study of flora of different phytogeographical areas. Minimum 3 examples from each region.
3. Biodiversity studies of a) fishes b) amphibians c) reptiles d) aves d) mammals available in the local area.
4. Biodiversity studies of important a) angiosperms b) gymnosperms c) algae d) fungi available in the local area.
5. Maintenance of microbes, plants & animals with special reference to Lonar crater.
6. Isolation of microbes from air, soil, water

7. Preparation of herbarium of plants used by local tribal people
8. Ethnozoological collection and traditional uses
9. Preparation and Maintenance of museum and herbarium (microbes, plants, animals)
10. Formulation of ethnobiological drugs

With the help of Specimen, models, photographs or sketches.

Visit: To forest, water, grassland ecosystem

Semester II

Practical-2 BD 4

I Qualitative analysis of Phytoplankton, cyanobacteria and other algae
2. Qualitative analysis of Zooplanktons
3. Preparation of nutrient broth, nutrient agar and PDA
4. Simple staining of bacteria.
5. Gram staining of bacteria.
6. Isolation and pure culture I) Streak plate ii) pour plate
7. Isolation of coliform bacteria from sewage water
8. Isolation and identification of microbes (Fungi, bacteria) from soil
9. Preparation of growth curves using bacterial culture.
10. Measurement of primary productivity and net productivity in water body by light and Dark bottle method.
11. Camera Lucida diagrams of organisms (Fungi, bacteria, protozoan, Cyanobateria).
12. Study of community characteristics by quadrant and transect method.
13. Study of ecosystem (Soil, water, forest) and submit detail report.
14. Study of important Timbers and their pests
15. Sampling Technique and experimental design
16. Poster / Power point presentation on environmental issues.

Training programme for students-student should be assigned to visit/training programme in hospital/dairy/water purification plant/ biotechnological industry/research institution. Student should submit report of the visit/ training

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SEMESTER-III

Practical:3 BD 4

1) Preparation of culture media
2) Sterilization of glasswares, chemicals and culture media
3) Inoculation of microbes (fungus/bacteria)
4) Isolation of DNA from blood, plant tissues and bacteria.

5) Growth of Bacteria in LB medium.
6) Harnessing information in internet
7) Preparation of Data base of local medicinal plants/ animals
8) Using softwares for identification of species
9) Accessing existing data bases on the WWW
10) *In vitro* culture/ micropropagation of medicinal plants

Visit to - National Tissue culture and Molecular Biology Laboratories.

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Semester-IV

4BD 1: Dissertation

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